



Destiny Rezendes @dezzie_rezzie

Feb 9, 2024 · 12 tweets · [dezzie_rezzie/status/1756053850694287636](#)

1 📖 There is nothing that anyone can tell me to convince me that Ralph Baric of UNC Chapel Hill is an innocent character in the C19 Pandemic & neither is DARPA. By the end of this thread I'm sure you'll agree with me. [Buckle up, folks]



2 📖 Let's start with Moderna, the company that Baric signed a Material Transfer Agreement [MTA] w/ in 2015, 2017, & 2019. Moderna had simultaneously signed a MTA with NIH's Vaccine Research Center [VRC] for mRNA CoV vaccine platform.

Wikipedia
40 languages

Moderna

Article Talk
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From Wikipedia, the free encyclopedia

Moderna, Inc. (/məˈdʒnə/ *mə-DUR-neh*)^[4] is a pharmaceutical and biotechnology company based in Cambridge, Massachusetts, that focuses on RNA therapeutics, primarily mRNA vaccines. These vaccines use a copy of a molecule called messenger RNA (mRNA) to carry instructions for proteins to produce an immune response.^{[5][1]} The company's name is derived from the terms "modified", "RNA", and "modern."^[6] [7][8]

The company's only commercial product is the Moderna COVID-19 vaccine, marketed as Spikevax. The company has 45 treatment and vaccine candidates, of which 38 have entered clinical trials. Candidates include possible vaccines for influenza, HIV, respiratory syncytial virus, Epstein–Barr virus, the Nipah virus, chikungunya, human metapneumovirus, varicella zoster virus, as well as a cytomegalovirus vaccine, a Zika virus vaccine funded by the Biomedical Advanced Research and Development Authority, and three cancer vaccines. The company's pipeline also includes a cell therapy-based treatment: a relaxin fusion protein being developed to treat acute decompensated heart failure. It also includes candidates that use OX40 ligand, interleukin 23, IL36G, and interleukin 12 for cancer immunotherapy, specifically treatment of breast cancer, urothelial carcinoma, lymphoma, and melanoma. Also being developed by Moderna is a regenerative medicine treatment that encodes vascular endothelial growth factor A to stimulate blood vessel growth for patients with myocardial ischemia.^[1]

History

Moderna was founded in 2010 by Derrick Ross, Timothy A. Springer, Kenneth R. Chien, Robert S. Langer, and Noubar Afeyan.^[9] Stéphane Bancel, the current CEO, was appointed as CEO in 2011.^[10] Between 2011 and 2017, Moderna raised \$2 billion in venture capital funding.^{[7][8]}

Moderna headquarters in Cambridge, Massachusetts

Formerly	Moderna Therapeutics (2010–2018)
Company type	Public
Traded as	Nasdaq: MRNA- [*] Nasdaq-100 component S&P 500 component
ISIN	US00770K1079
Industry	Biotechnology
Founded	September 2010; 13 years ago
Founders	Derrick Rossi

3 🇺🇸 Now, Moderna was a new startup that prior to C19 hadn't brought a vaccine to market, they did however in 2013 joined DARPA for a \$25M dollar project called ADEPT-PROTECT, whose stated goal is: Rapid development & deployment of medical countermeasures (MCMs) based on the encoding of antibodies in RNA and DNA. That's 25million of tax payer dollars to a company that had yet been successful by any meaningful measure. Moderna at the time was only 3 years old.

Product development [edit]

In 2013, the company formed a partnership with [AstraZeneca](#) to develop treatments for cardiovascular, metabolic, and renal diseases, as well as cancer. Moderna also was awarded a \$25,000,000 grant by DARPA through a program Autonomous Diagnostics to Enable Prevention and Therapeutics: Prophylactic Options to Environmental and Contagious Threats (ADEPT-PROTECT).^[11] Its stated goal was to develop an mRNA vaccine with the capability to suppress a global pandemic within 60 days. In January 2014, the company entered an agreement with [Alexion Pharmaceuticals](#) to develop treatments against ten diseases.^[12] On January 14, 2014, Moderna announced the creation of its first venture, Onkaido Therapeutics, to focus "exclusively on developing mRNA-based oncology treatments."^{[13][14]} It launched its second venture, Valera, in January 2015, with a focus on "viral, bacterial and parasitic infectious diseases."^{[15][16]} Employees of Valera and Moderna developed an mRNA vaccine candidate against [Zika virus](#) infection.^[17] Another venture, Elpidera, was announced in May 2015 to continue work on RNA therapies advancing Moderna's work with Alexion.^{[18][19]}

In 2015, the company formed a partnership with [Merck & Co.](#) to develop treatments for cancer, and in 2016 the company formed a partnership with [Vertex Pharmaceuticals](#) to develop treatments for [cystic fibrosis](#).^[10] ^{[20][21][22]} In January 2016, the [Bill & Melinda Gates Foundation](#) committed to provide at least \$20 million in [grant](#) funding to the company.^[1] In 2017, Alexion terminated its partnership with Moderna after safety issues prevented their work from reaching human trials.^[23]

A primary objective of DARPA's Biological Technologies Office (BTO) is to better ensure the health, and thereby the force readiness, of the country's military service community. The COVID-19 pandemic, which rapidly spread worldwide from an initial outbreak in China at the end of 2019, highlights some of the most perilous vulnerabilities to deployed military personnel and civilians: lack of protection and medical countermeasures (MCMs) against endemic and emerging biothreats. The Zika outbreak in 2015-2016, the more recent Ebola outbreak in the Democratic Republic of Congo, and mosquito-borne viruses such as Chikungunya and Dengue are among these threats.

Vaccines are the traditional mainstay of long-term infection prevention, while antibody approaches have at times been used to treat active infections. In one antibody-based approach that is being applied on a small scale in the current pandemic, blood serum with presumably protective antibodies

obtained from those who have recovered from an infection is infused into patients. In more recent decades, monoclonal antibodies manufactured in cultured immune-system cells have been used to treat certain cancers and immune disorders. However, these treatments have suffered from shortcomings - including slow development, expensive manufacture, and dependence on continuous cold storage - that have prevented widespread use by the military.

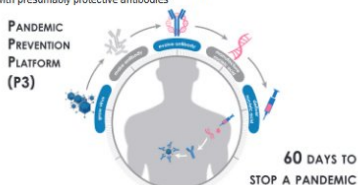
In 2012, the ADEPT-PROTECT program*, DARPA began investing in the development of gene-encoded vaccines, a new category of preventive measures based on DNA or RNA. In this approach, genes that encode immune-stimulating antigens, such as the spike proteins on the surfaces of viruses like the one (SARS-CoV-2) that causes COVID-19, are delivered directly to a recipient's body. There, the instructions carried in the DNA or RNA elicit the body's own cells to manufacture the antigenic viral protein, which, in turn, elicits an immune response to the virus.

Gene-based vaccines have shown great promise as a means to provide safe, reproducible, long-term immune protection. For vaccines to work, however, they often require more than one dose and it often takes weeks to months before a recipient's immune system builds up sufficient protection against the vaccine's viral target. With these biomedical realities come threats to warfighters if they deploy to pathogen-rife regions before having established relevant immunity and threats to military missions due to delayed deployment of personnel until they achieve immune protection.

For a vaccine to confer immunity, it must lead to the production within a recipient of highly potent antibodies that can neutralize the pathogen. DARPA initiated the ADEPT/PROTECT program (most often referred to more simply as ADEPT) with the intention of bushwhacking a novel pathway to near-immediate protection against pathogens for which vaccines are not yet available and to confer interim-term protection during the development of a vaccine, which can take years.

DARPA's investments in this space led directly, with the biotechnology firm Moderna as a contracted performer on the program, to a first-ever human clinical trial with an RNA vaccine in 2019.

Earlier proof-of-concept experiments funded under ADEPT primarily with 6.1 funding (for basic research) demonstrated that delivery of antibody-making instructions — by way of messenger ribonucleic acid (mRNA), deoxyribonucleic acid (DNA), or another genetic-information-carrying tactic that relies on small viruses known as adenovirus-associated viruses (AAVs)



A follow-on effort to the ADIPT program, known as the Pandemic Prevention Platform program, aims to take pandemics off of the list of humanity's angsts with a range of technologies and practices marked by early detection of an outbreak and, within 60 days, development and widescale deployment of protective

Preclinical studies & GMP manufacture (5.1 to 5.2)

Genotoxicity studies and expression studies in humans (Genotoxicity studies)

Gene-encoded antibodies
for near-immediate, temporary
protection
(ADEPT-PROTECT)

— led to the production of antibodies that conferred protection in test animals exposed to the mosquito-borne Chikungunya (ChikV) virus.

In a more applied phase of technology development, Moderna was converted to 6.2 funding (applied research) to begin pre-clinical studies in non-human primates with an RNA-encoded antibody against ChikV and to produce the countermeasure using Good Manufacturing Practices (GMP), which regulatory agencies such as the Food and Drug Administration often require.

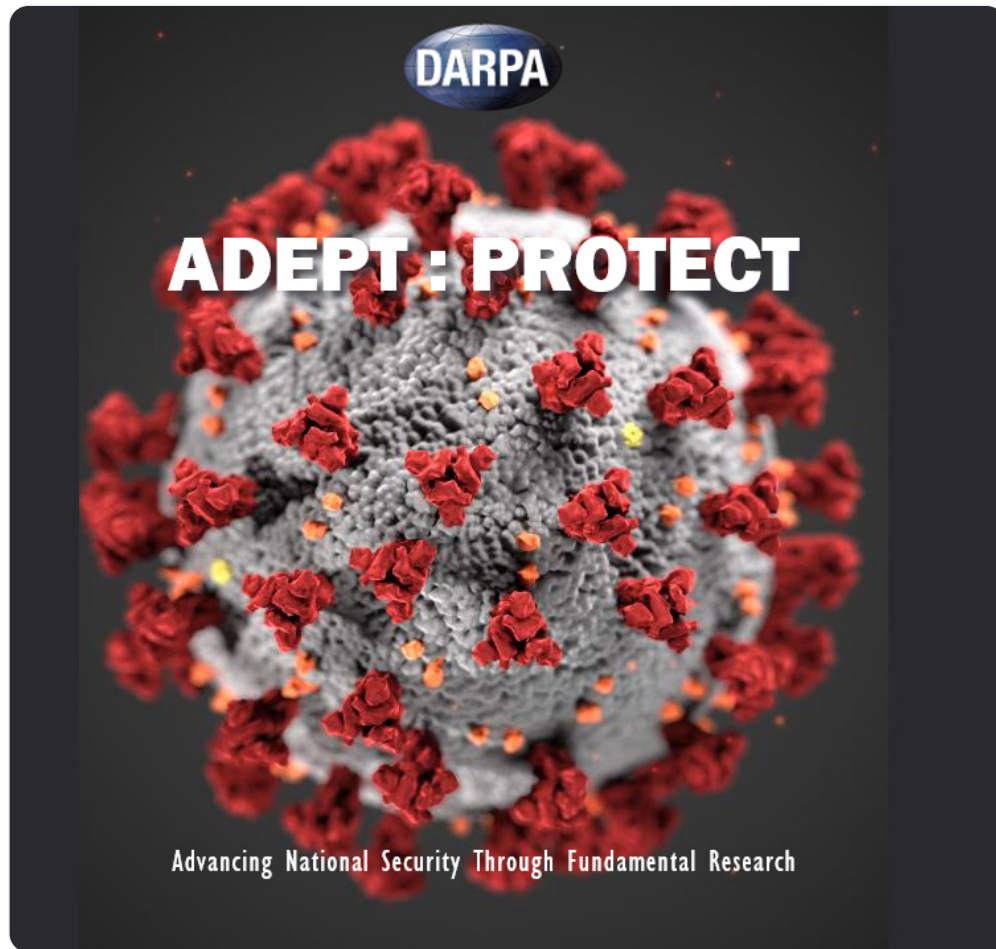
Moderna subsequently used company funding to conduct a Phase I clinical trial with 22 healthy volunteers using an mRNA-encoded ChikV antibody. This marked the first safety demonstration of an RNA-based medical countermeasure. Moderna reported these promising results of its clinical study in 2019. The trial demonstrated platform safety as well as the ability to generate protective levels of functional antibody in humans. In response to COVID-19, Moderna in March 2020 initiated human trials of gene-encoded antibodies that target SARS-CoV-2.

Research by Moderna and other ADI performers has provided proof-of-concept results that simultaneously delivering gene-encoded antibody treatment and vaccine confers the recipient with immediate immune

protection while a long-term immune response develops.

DARPA's R&D investments to de-risk the pathway to gene-based medical countermeasures have spurred like-minded innovators. In addition to Moderna, several other companies, including AstraZeneca and Inovio, have made major investments in this budding biomedical field. These DARPA investments also spurred the biotech sector to work toward optimizing the delivery of gene-based MCMs for increased efficacy and tolerability. Other government agencies—including the DoD's Joint Program Executive Office for Chemical, Biologic, Radiologic, and Nuclear Defense (JPEO-CBRND), the Biomedical Advanced Research and Development Authority (BARDA), and the National Institute of Health's Intramural Research Program (NIAID)—also have recognized the power of gene-enabled antibody technology to fight a range of bioterror and infectious diseases.

Progress in the ADEPT program has earned supplemental 6.2 funding from the U. S. Congress in response to the 2014 Ebola virus outbreak in West Africa. To address current and future Ebola outbreaks, these funds were directed toward development, manufacture, and/or clinical evaluation of several MCMs, including one



4 📖 One year later in 2014, Moderna lands a collaboration with the Karolinska Institute [KI] in Sweden. Important to note that one of their founders, Ken Chien was a research director at KI since 2013, his specialty was cardiovascular biotechnology. Just before Chien started at KI, he was approached by another Moderna Founder, Derrick Rossi to begin creating what would become Moderna. Chien's focus after that was focused on his studies that found "mRNA in heart muscle, resulting in a patent on the discovery that triggered mRNA towards therapeutic applications."

moderna

Moderna to Collaborate with Karolinska Institutet and Karolinska University Hospital on Discovery of New Messenger RNA Therapeutics™

October 16, 2014

Strategic research and clinical partnership will advance state-of-the-art discoveries on the use of messenger RNA (mRNA) Therapeutics™ to treat serious diseases

CAMBRIDGE, Mass. and STOCKHOLM, Sweden, October 16, 2014—Moderna Therapeutics today announced a strategic, long-term collaboration with Karolinska Institutet (KI) and Karolinska University Hospital (KUH) for the discovery and development of innovative drugs using Moderna's messenger RNA (mRNA) Therapeutics™ technology. mRNA Therapeutics™ enable the in vivo production of both intracellular proteins and secreted proteins. As a result, Moderna's platform has the potential to speed the development and manufacture of treatments for many diseases that are currently untreatable with existing pharmaceutical approaches.

"This project is an important step in advancing medical science," said Professor Hans-Gustaf Ljunggren, Dean of Research at Karolinska Institutet. "It will help achieve our common goal of rapidly advancing new drug candidates into the clinic."

Under the terms of the partnership, Moderna will sponsor research grants for scientists at both institutions to conduct preclinical research with novel mRNA Therapeutics™. As this pre-clinical work is successfully completed, Moderna will conduct clinical trials of new drug candidates at Karolinska University Hospital.

"As a leading medical center, we continually strive to improve the treatment of serious diseases," said Professor Mats Eriksson, Karolinska University Hospital. "Our clinical researchers are excited to work with Moderna's groundbreaking mRNA Therapeutics platform and speed the advancement of new treatments to patients."

To solidify the scientific and clinical collaboration between the organizations, and to optimize the output of this important partnership, Moderna is creating a new laboratory in Stockholm, Sweden, located in the Novum building next to the Karolinska University Hospital Huddinge campus.

"Moderna is investing heavily to bring mRNA Therapeutics to patients, and our science is accelerating rapidly," said Stéphane Bancel, President and founding CEO of Moderna. "This partnership puts our mRNA Therapeutics platform in the hands of Karolinska's world-class scientists and clinical researchers to develop new drugs and therapeutic approaches that cannot be done with small molecules or biologics – bringing new hope to patients with serious diseases."

"Strategically, we view this, our first academic partnership, as highly complementary to our existing drug discovery and development efforts, both with our pharmaceutical partners AstraZeneca and Alexion and with Moderna ventures such as Onkaido," added Bancel. "Given the broad potential of this revolutionary drug technology, it was critical to us to work closely with a leading academic medical institution. We are honored to be partnering with one of the best academic medical research institutions in the world."

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For more information on Karolinska Institutet and Karolinska University Hospital, please visit ki.se and karolinska.se.

For more information on Moderna Therapeutics please visit modernatx.com.

About Karolinska Institutet

Onkaido Therapeutics, a venture company formed, funded and wholly-owned by Moderna, is focused exclusively on the advancement of oncology products for previously undruggable targets and as a superior alternative to existing drug modalities. Leveraging Moderna's messenger RNA Therapeutics™ platform, an entirely new in vivo drug modality that produces human proteins or antibodies inside patient cells, Onkaido plans to rapidly turn scientific innovation into cancer therapies that can make a real difference for patients. onkaido.com

About Karolinska University Hospital

Karolinska University Hospital is one of Europe's largest university hospitals and together with Karolinska Institutet has a leading role within the field of medical breakthroughs. The hospital aims to always put the patient first by providing the best possible medical expertise, treatment and care. Through innovation and active collaboration with industry and academia, it is committed to being internationally prominent in medicine, research and education.

About Moderna Therapeutics

Moderna is pioneering messenger.RNA.Therapeutics™, an entirely new in vivo drug modality that produces human proteins or antibodies inside patient cells, which are in turn secreted or active intracellularly. This breakthrough platform addresses currently undruggable targets and offers a superior alternative to existing drug modalities for a wide range of disease conditions. Moderna has developed a broad intellectual property estate, including more than 320 patent applications covering novel nucleotide chemistries and drug compositions. The company plans to develop and commercialize its innovative mRNA drugs through a combination of strategic relationships as well as new formed ventures, like Onkaido.I.L.C, its oncology Drug Development Company. Founded by Flagship.Venture.Labs™ Cambridge-based Moderna is privately held and currently has strategic agreements with AstraZeneca and [Alexion Pharmaceuticals](http://Alexion.Pharmaceuticals). To learn more, visit www.modernatx.com.

https://s29.q4cdn.com/435878511/files/doc_news/2014/10/16/moderna-collaborate-karolinska-institutet-and-karolinska.pdf

moderna

Moderna Announces Funding Award from BARDA for \$8 Million with Potential of up to \$125 Million to Accelerate Development of Zika Messenger RNA (mRNA) Vaccine

September 7, 2016

Company plans to file IND by end of 2016

CAMBRIDGE, Mass., September 7, 2016 — Moderna Therapeutics, a clinical stage biotechnology company pioneering messenger RNA (mRNA) Therapeutics™ to create a new generation of transformative medicines for patients, today announced a funding award of \$8 million with the potential of up to \$125 million from the Biomedical Advanced Research and Development Authority (BARDA), a division of the Office of the Assistant Secretary for Preparedness and Response (ASPR) within the U.S. Department of Health and Human Services (HHS), to accelerate development of a novel Zika mRNA vaccine.

Under the terms of the agreement, Moderna will manufacture and supply up to 100 million doses of the vaccine for large-scale manufacturing. Moderna plans to file an IND by the end of 2016 and begin Phase 1 study within the next few months. Development efforts are ongoing.

"We believe our mRNA vaccine technology, which may position Moderna as a leader in the field, is quickly as possible, and we are currently in Phase 1 study within the next few months. Moderna has two additional Phase 1 studies for approximately 250 healthy volunteers and one therapeutic focus for HIV."

"With two mRNA vaccine technology, we're in the fortunate position of being able to rapidly apply learnings to inform our Zika vaccine development program," said Michael Watson, President of Valera. "It's clear the world needs novel, innovative approaches to address both known and future infectious disease threats. We hope to be at the forefront of advancing this innovation."

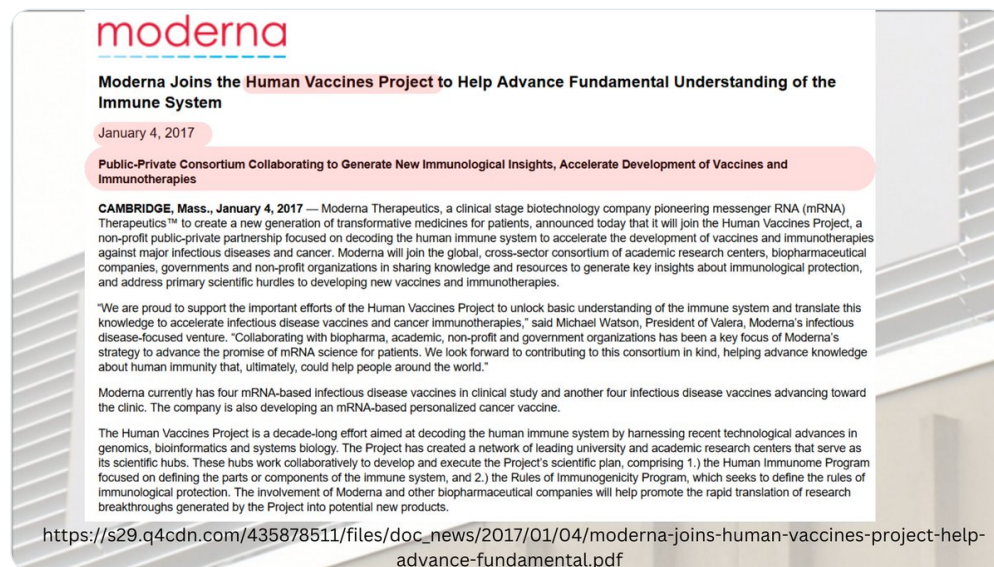
About Moderna's mRNA Vaccine Technology

Vaccines work by mimicking an infection from a known pathogen, such as a virus, without causing disease. They teach the immune system to recognize antigens, which are parts of pathogens. Current vaccines introduce antigens to the body as weakened or inactivated pathogens or as selected antigens produced outside the body. Moderna's approach more closely mimics nature by delivering mRNA to the body's cells, which, in turn, produce antigenic proteins as if the body was infected by a virus. These antigenic proteins are identified and remembered by the immune system. When a person is exposed to the pathogen in the future, the body is able to recognize it as foreign and mounts an immune response, including production of antibodies that can help to destroy the pathogen.


About Moderna Therapeutics

Moderna is a clinical stage pioneer of messenger.RNA.Therapeutics™, an entirely new in vivo drug technology that produces human proteins, antibodies and entirely novel protein constructs inside patient cells, which are in turn secreted or active intracellularly. This breakthrough platform addresses currently undruggable targets and offers a superior alternative to existing drug modalities for a wide range of diseases and conditions. Moderna is developing and plans to commercialize its innovative mRNA drugs through its own ventures and its strategic relationships with established pharmaceutical and biotech companies. Its current ventures are: Onkaido, focused on oncology; Valera, focused on infectious diseases; Elpidora, focused on rare diseases; and Caperna, focused on personalized cancer vaccines. Founded by Flagship.Venture.Labs™ Cambridge-based Moderna is privately held and currently has strategic agreements with AstraZeneca, [Alexion Pharmaceuticals](http://Alexion.Pharmaceuticals), Merck and [Vertex Pharmaceuticals](http://Vertex.Pharmaceuticals). To learn more, visit www.modernatx.com.

https://s29.q4cdn.com/435878511/files/doc_news/2016/09/07/moderna-announces-funding-award-barda-8-million-potential-125.pdf



5 📖 Almost 2yrs ago I made this infographic to highlight these details. *As a side note; #BillGates the eugenics-minded college drop-out that pretends he's a doctor actually got a degree, albeit honorary, from the Karolinska Institute in 2004. <https://www.fiercebiotech.com/biotech/press-release-bill-and-melinda-gates-to-receive-honorary-degrees-from-karolinska-institutet>



Formerly Moderna Therapeutics (2010–2018)

Type Public


Traded as Nasdaq: MRNA; S&P 500 component

ISIN US60770K1079

Industry Biotechnology

Founded September 2010; 12 years ago

Founders Derrick Rossi, Timothy A. Springer, Robert S. Langer, Kenneth R. Chien



Kenneth R. Chien

Career and research [edit]

Chien became a member of the faculty at the University of California at San Diego^[14] acting as director of the Institute for Molecular Medicine from 2000 to 2005, with an adjunct appointment as a Professor of the Salk Institute^[15] During that period, Chien was also responsible for co-founding the Institute of Molecular Medicine at Beijing's Peking University^[15] Chien then worked as Scientific **Director of the Cardiovascular Research Center** at Massachusetts General Hospital from 2005 to 2012, concurrent to directing the Cardiovascular Program of the Harvard Stem Cell Institute from 2007 to 2013.^[14] In 2013 Chien took up a position as Professor of Cardiovascular Research and Research Director of the Wallenberg-Cardiovascular Institute **at Karolinska Institute** in Stockholm, Sweden.^[14] In an interview, Chien discussed the opportunity at KI to work closely with AstraZeneca in Malmö to move forward discoveries in regenerative therapeutics made in his lab towards clinical application, as well as praising Sweden as "a country that has decided to put its faith in science and technology".^[16] Dr Chien has received numerous grants from the National Heart, Lung, And Blood Institute, dating back to 1985.^[17] He has also applied for several patents, securing a total of 17.^[18]

Moderna involvement [edit]

While working at Harvard, Chien was approached by Derrick Rossi, a colleague at the Harvard Stem Cell Institute, about co-founding a newco, based on findings in the Rossi lab on reprogramming stem cells with mRNA.^[19] This eventually turned into the medical research company Moderna Therapeutics, co-founded by Rossi. Chien and Bob Langer under the aegis of Flagship Ventures in 2011.^[20] In 2011, the Chien Lab made the discovery of the high efficiency expression of VEGF mRNA in heart muscle, resulting in a patent on the discovery that triggered mRNA towards therapeutic applications.^{[18][21]} In 2013, Chien and his associates documented the ability of VEGF mRNA for coronary vascular regeneration and to reverse the onset of heart dysfunction, thereby opening the potential of were researching the possibility of using synthetic messenger RNA (mRNA) to produce therapeutic desired effects in a patient's muscle cells.

"What we have shown is that muscle cells take up this synthetic mRNA and will express almost any protein quickly. The technology will allow an intense, focused, one-time application to drive a therapeutic effect that might have a long-lasting effect by affecting, expanding and redirecting the fate of rare native tissue progenitors that are normally mobilized during injury and usually contribute to scar tissue."^[19] At Karolinska, the Chien lab documented the ability to generate large numbers of human islet heart progenitor cells from human embryonic stem cells, which resulted in a partnership with AstraZeneca to move the project toward clinical application.^{[22][23]}

In February 2019, AstraZeneca and the Chien lab reported the first in human study of an mRNA therapeutic, noting reversal of vascular dysfunction in diabetic patients by VEGF mRNA.^[24]

Heart

Article Talk

From Wikipedia, the free encyclopedia

This article is about the internal organ. For other uses, see Heart (disambiguation). "Cardiac" redirects here. For the computer programming tool, see CARDIAC. For the comics character, see The Flash (comics character).

The **heart** is a **muscular** organ in most animals. This organ pumps blood through the blood vessels of the circulatory system.^[1] The pumped blood carries oxygen and nutrients to the body, while carrying metabolic waste such as carbon dioxide to the lungs.^[2] In humans, the heart is approximately the size of a closed fist and is located between the lungs, in the middle compartment of the chest.^[3]

moderna





In October 2013, the company was awarded up to \$25 million by DARPA to develop messenger RNA therapeutics. In November 2013, the company raised \$110 million of equity financing.^[20]





2021 [edit]

On March 15, 2021, Phase I clinical trials began for mRNA-1283, primarily intended to be used as a COVID-19 vaccine booster.^[45] On June 25, 2021, the Food and Drug Administration added a warning about rare cases of **myocarditis**, a heart inflammation, associated with both Moderna and Pfizer/BioNTech vaccines to their respective fact sheets.^{[46][47]}

In September 2021, the company began work on a combined COVID-19 vaccine booster and influenza vaccine.^[53] That same month, it entered an agreement with biomanufacturing company **National Resilience** to manufacture genetic components for its COVID-19 products at its facility in Mississauga, Ontario.^[54]

[RESILIENCE] Board of Directors

Chris Darby
CEO, In-Q-Tel

Susan Desmond-Hellmann, I MPH
Former CEO, Bill & Melinda Gates Foundation

6 🇺🇸 Where things get strange is when you find o/that BEFORE Baric started playing Frankenstein w/ Bat CoVs he was messing with Rabbit CoVs. In his 1992 publication Baric explored how Rabbit's infected w/CoVs suffered Myocarditis. Oddly its a similar mechanism to what Chien was looking into at KI when he started Moderna.

Pfizer Press release

Covid-19

Vaccines

Pfizer and BioNTech Receive Expanded U.S. FDA Emergency Use Authorization of COVID-19 Vaccine Booster to Include Individuals 18 and Older

Friday, November 19, 2021 - 08:25am



- Expanded authorization allows more Americans to receive a booster dose to help preserve a high-level of protection against COVID-19

NEW YORK & MAINZ, Germany--(BUSINESS WIRE)-- Pfizer Inc. (NYSE: PFE) and BioNTech SE (Nasdaq: BNTX) today announced that the U.S. Food and Drug Administration (FDA) has expanded the emergency use authorization (EUA) of a booster dose of the Pfizer-BioNTech COVID-19 Vaccine to include individuals 18 years of age and older. The booster dose is to be

An Experimental Model for Myocarditis and Congestive Heart Failure after Rabbit Coronavirus Infection

Suzanne Edwards, J. David Small,
Joachim Dieter Geratz, Lorraine K. Alexander,
and Ralph S. Baric

Department of Epidemiology, Program in Infectious Diseases, School of Public Health, and Department of Pathology, School of Medicine, University of North Carolina at Chapel Hill

In a model for virus-induced myocarditis and congestive heart failure, rabbit coronavirus infection was divided into acute (days 2-5) and subacute (days 6-12) phases on the basis of day of death and pathologic findings. During the acute phase, the principal histologic lesions were degeneration and necrosis of myocytes, myocytolysis, interstitial edema, and hemorrhage. The

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In a model for virus-induced myocarditis and congestive heart failure, rabbit coronavirus infection was divided into acute (days 2–5) and subacute (days 6–12) phases on the basis of day of death and pathologic findings. During the acute phase, the principal histologic lesions were degeneration and necrosis of myocytes, myocytolysis, interstitial edema, and hemorrhage. The severity of these changes increased in the subacute phase. Pleural effusion and congestion of the lungs and liver were also present at this time. Myocarditis was detected by day 9 and peaked by day 12. Heart weights and heart weight-to-body weight ratios were increased, and dilation of the right ventricular cavity became prominent early in infection and persisted. In contrast, dilation of the left ventricle occurred late in the subacute stage. Virus was isolated from infected hearts between days 2 and 12. These data suggest that rabbit coronavirus infection progresses to myocarditis and congestive heart failure.

Viruses have long been agents of heart disease in [1-3]. Epidemiologic evidence, 25-5% of a human population, viruses common to cardiac involvement [4]. In animals, viruses common to the picornaviruses, paramyxoviruses, and coronaviruses, may result in degeneration lead to inflammation of the heart result in arrhythmias, collapse, and acute viral infection of the heart factor in the development of [8-11].

Coxsackie B virus and enteroviruses) infections model systems for virus-exact mechanism for these, however, considerable evidence primarily immune-mediated viral cytotoxicity to myocardial cells. Myocarditis, encephalomyocarditis virus to myocardiocytes and conduction system.

Received 20 June 1991; revised 10 July 1991
Presented in part: International Conference on
LHC, July 1989

Grant support: National Invertebrate Association (871135 and Est. 86-612).

Reprints or correspondence: I
ology, School of Public Health, I

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0022-1899/92/6501-0018\$01.00

To assay viral titers in the heart muscle, moribund animals were intravenously injected with 50 mg/kg sodium pentobarbital, and the hearts were perfused and washed extensively with PBS. Two hundred micrograms of left ventricle were ground in 0.8 ml of PBS and centrifuged at 12,000 g for 10 min in an Eppendorf centrifuge (Fisher Scientific, Norcross, GA). The su-

1992

rabbit coronavirus infection progresses to myo-

<http://tinyurl.com/3hurh7k6>

1992

day 12. Heart weights and heart weight-to-body weight ratios were increased, and dilation of the right ventricular cavity became prominent early in infection and persisted. In contrast, dilation of the left ventricle was isolated from infected hearts. Rabbit coronavirus infection progresses to myocarditis and congestive heart failure.

RbCV infection results in degeneration and necrosis of myocytes, myocarditis, interstitial edema, hemorrhage, increased heart weight and heart weight-to-body weight ratios, and dilated ventricles. Although dry weights of the hearts were not determined, pathologic findings suggest that the increase in heart weight is probably caused by interstitial edema. Animals dying in the subacute stage of the disease develop congestion in the lungs and liver, suggesting that a significant percentage of these animals probably die from heart failure. Manifestations of both left- and right-sided heart failure are clearly evident in the subacute phase of infection [4, 6, 7, 21]. Previous studies in our laboratory clearly demonstrated the presence of viral antigen in regions of myocardial degeneration and infectious virus in the hearts of infected animals, supporting the idea that changes in the myocardium are most likely caused by viral replication in the heart muscle [17].

Coxsackie B virus and encephalomyocarditis virus (both enteroviruses) infections in mice are the best-characterized model systems for virus-induced heart disease [1, 5]. The exact mechanism for their pathogenesis is still controversial; however, considerable evidence suggests that the disease is primarily immune-mediated rather than the result of direct viral damage.

Materials and Methods

Animals and virus. Rabbit coronavirus (RbCV) was originally obtained from a stock maintained by one of the authors (J.D.S.). Viral stocks were diluted to 10^5 – 10^6 RID₅₀/ml and stored at -140°C . Male New Zealand white rabbits (Charles River, Wilmington, MA) were used.

Received 20 June 1991; revised 6 September 1991.
Presented in part: International Coronavirus Symposium, Cambridge, UK, July 1989.
Grant support: National Institutes of Health (AI-23946); American Heart Association (871135 and Established Investigator Award 890192 to R.S.B.).
Reprints or correspondence: Dr. Ralph S. Baric, Department of Epidemiology, School of Public Health, University of North Carolina at Chapel Hill, Chapel Hill, NC 27599-7400.
The Journal of Infectious Diseases 1992;165:134–40.
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0022-1899/92/6501-0018\$01.00

<http://tinyurl.com/3hurh7k6>

day 12. Heart weights and heart weight-to-body weight ratios were increased, and dilation of the right ventricular cavity became prominent early in infection and persisted. In contrast, dilation of the left ventricle was isolated from infected hearts. Rabbit coronavirus infection progresses to myocarditis and congestive heart failure.

[1]. Rather, the preponderance of data suggest that cardiac damage is immune-mediated [12, 13, 34–39]. The pathogenic mechanism is unclear. The disease is immune-mediated, correlates with the presence of viral antigen in the hearts of infected animals, and may initially be reported early in cardiac parvovirus infection [5].

We have described a model system for virus-induced myocarditis and congestive heart failure in rabbits. These data provide the underlying foundation for future studies examining the mechanism of RbCV-induced heart disease in rabbits.

We have described a model system for virus-induced myocarditis and congestive heart failure in rabbits. These data provide the underlying foundation for future studies examining the mechanism of RbCV-induced heart disease in rabbits.

thy [8–11].

Coxsackie B virus and encephalomyocarditis virus (both enteroviruses) infections in mice are the best-characterized model systems for virus-induced heart disease [1, 5]. The exact mechanism for their pathogenesis is still controversial; however, considerable evidence suggests that the disease is primarily immune-mediated rather than the result of direct viral damage.

Dimensions of the cardiac walls during RbCV infection. Changes in the size of the heart and, in particular, dimensions of the ventricles were evident after RbCV infection (figure 2). To conclusively document the anatomic changes in the heart during infection, the thickness of the ventricular wall was measured through the coronal axis at the midpoint of the ventricles.

nally obtained from a stock maintained by one of the authors (J.D.S.). Viral stocks were diluted to 10^5 – 10^6 RID₅₀/ml and stored at -140°C . Male New Zealand white rabbits (Charles River, Wilmington, MA) were used.

<http://tinyurl.com/3hurh7k6>

7 📖 We now know that Pfizer, who stole the mRNA C19 formula from Moderna, had known that Myocarditis was a Serious Adverse Event for their injections LONG before it was made public in November 2021 after it had been injected into billions of people. This has since been admitted by Pfizer & covered by great minds like @P_McCulloughMD & @JesslovesMJK

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10823859/>

ECHOCARDIOGRAPHIC CHANGES FOLLOWING RABBIT CORONAVIRUS INFECTION

Lorraine K. Alexander, Bruce W. Keene, and Ralph S. Baric

The Department of Epidemiology
The University of North Carolina at Chapel Hill
Chapel Hill, North Carolina
The College of Veterinary Medicine
North Carolina State University
Raleigh, North Carolina

Much of our understanding of the mechanisms by which viruses cause myocarditis and/or dilated cardiomyopathy (DCM) is based on animal models of virus-induced heart disease. Information concerning cardiac function during acute and/or chronic viral infection in these models is limited (1). A well-defined model in a species conducive to monitoring of cardiac function is needed to enhance our understanding of viral induced heart disease. We have previously demonstrated that rabbit coronavirus (RbCV) infection results in degeneration and necrosis of myocytes, myocarditis, and gross organ and histopathologic changes of DCM (2,3). We have also shown that electrocardiographic changes observed during RbCV infection mimic those in humans with myocarditis and DCM (submitted). This chapter describes the echocardiographic changes observed during RbCV infection.

Eleven male New Zealand white rabbits were selected prior to echocardiography with a combination of xylazine (0.17 mg/kg) and ketamine (17 mg/kg). An electrocardiogram was monitored continuously during echocardiography and two-dimensional echocardiographic views were recorded with the animal in right lateral recumbency from the right parasternal long and short-axis positions using a 7.5 MHz annular array transducer. Measurements of left ventricular (LV) size, systolic function, mitral valve motion, and aortic and left atrial diameter were made according to the American Society of Echocardiography standards for M-mode echocardiography. Briefly, M-mode measurements included LV end diastolic and systolic chamber dimensions and wall thickness obtained by guiding the M-mode cursor between the papillary muscles from a right parasternal short-axis imaging plane just ventral to the mitral valve leaflets at the level of the chordae tendinae. Aortic and left atrial dimensions were measured from an M-mode view obtained by guiding the cursor through the aorta and left atrium in a right parasternal short axis view at the level of the aortic valve. The mitral valve motion and E-point - septal separation was observed and recorded from M-mode images obtained by guiding the cursor through a right parasternal

Coron. and Related Viruses, Edited by R. J. Tabor and G. A. Leary
Bioscience Resource Project, 1999

2 ± 0.24
2 ± 0.17
1 ± 4.85
2 ± 0.07
8 ± 0.08
1 ± 0.11
0 ± 0.12
8 ± 0.14
6 ± 0.12
2 ± 0.20
4 ± 0.04

1.13 ± 0.44

1.14 ± 0.12

L. K. Alexander et al.

Table 1. Cardiac function values for 11 RbCV infected rabbits

Measurement	Uninfected ^a n=11	Nonsurvivors ^b n=5	Survivors ^c n=5
Left Ventricular (LV) diameter (d) (cm)	1.42 ± 0.24	1.13 ± 0.44	1.14 ± 0.12
LV diameter (d) (cm)	0.62 ± 0.17	0.93 ± 0.36	0.84 ± 0.17
% Fractional shortening	35.5 ± 4.85	17.33 ± 6.19	26.17 ± 12
Septal wall thickness (d) (cm)	0.22 ± 0.07	0.25 ± 0.06	0.22 ± 0.05
Septal wall thickness (s) (cm)	0.38 ± 0.08	0.28 ± 0.09	0.33 ± 0.12
LV posterior wall thickness (d) (cm)	0.31 ± 0.11	0.32 ± 0.08	0.26 ± 0.03
LV posterior wall thickness (s) (cm)	0.50 ± 0.12	0.44 ± 0.13	0.42 ± 0.06
Left atrium diameter (cm)	0.88 ± 0.14	0.93 ± 0.15	0.86 ± 0.10
Aorta (cm)	0.66 ± 0.12	0.74 ± 0.13	0.68 ± 0.05
Left atrium Ao	1.22 ± 0.20	1.06 ± 0.39	1.28 ± 0.14
E point septal separation (EPSS)	0.14 ± 0.04	0.22 ± 0.16	0.126 ± 0.09

a = Mean ± SD.
b = Day 3 after infection.
c = diastole.
d = systole.

short axis view at the level of the mitral valve. LV fractional shortening was calculated as an ejection phase index of systolic function. All values reported reflect the mean of 3 measurements made on sinus beats. Rabbits were infected with 0.3 ml of a 1X 10³ - 1X 10⁴ RID₅₀ of RbCV and echocardiographic measurements were repeated using the same anesthetic and measurement protocol on days 3, 4, 9, 12 and 30 post-infection.

Two (18%) rabbits died during the acute phase of infection (day 3), 4 (36%) died in the early subacute phase (day 6), and 5 (45%) survived beyond day 12 into the chronic phase. Echocardiographic data is displayed in Table 1. The index of systolic ventricular function

ie. LV fractional shortening was calculated as
n. All values reported reflect the mean of 3
were infected with 0.3 ml of a 1X 10³ - 1X 10⁴

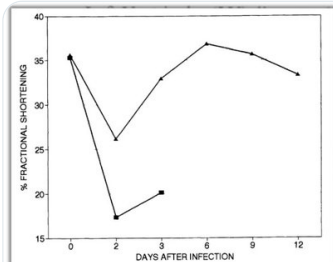


Figure 1. Percent fractional shortening in 11 RbCV infected rabbits.

a = Mean ± SD.
b = Day 3 after infection.
c = diastole.
d = systole.

short axis view at the level of the
an ejection phase index of systolic
measurements made on sinus beats. Rabbits were infected with 0.3 ml of a 1X 10³ - 1X 10⁴

https://link.springer.com/content/pdf/10.1007/978-1-4615-1899-0_18.pdf

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0.44 ± 0.13
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0.88 ± 0.14
0.93 ± 0.15
0.86 ± 0.10

Echocardiographic Changes following Rabbit Coronavirus Infection

115

chosen, % fractional shortening was depressed in all infected rabbits by day 3 post infection (Figure 1). Fractional shortening was more depressed in nonsurvivors (17.33 ± 6.19%, p = <0.001 from controls) as compared to survivors (26.17 ± 12%, ns from control). Mean LV wall thickness, chamber dimensions, and left atrial dimensions were not significantly different from controls throughout the study in either survivors or nonsurvivors. These findings confirm our previous pathologic studies in which rabbits dying early in infection (days 2-5) did not have significantly different LV wall thickness, and chamber dimensions from control animals.

We conclude that RbCV infection depresses an ejection phase index of systolic LV function, that this depression precedes gross morphologic changes in the ventricle, and that severe systolic dysfunction correlates positively with mortality. These findings provide a direct link between the severity of virus-induced cardiac dysfunction and survival during RbCV infection, characterizing a reproducible model of cardiac dysfunction following viral infection of the heart.

<p>1991-1998 Ralph Baric completes work on NIAID funded Rabbit Coronaviruses + Myocarditis</p> <p>1995: ECHOCARDIOGRAPHIC CHANGES FOLLOWING RABBIT CORONAVIRUS INFECTION-Baric</p>	<p>2008: Mark Denison & Ralph Baric synthesize full-length viral genomes to about 30 kb & recovery of a recombinant bat SARS-like coronavirus (SCoV)</p> <p>2015: Nature Article "Risky Bat Research" comes into the spotlight [Shi Zhengli-Li & Baric]</p>	<p>2017: Alexion Pharmaceuticals breaks \$100M partnership w/Moderna</p> <p>Dec 2018: Moderna goes public as the biggest biotech IPO in history at \$7.5b</p> <p>-EHA +Baric apply for DARPA project on SARS-CoVs</p>
<p>2006. Synthetic Viral Genomics. by Baric discloses "No-see-um" site method for chimeric SARS</p> <p>2010: Moderna Founded</p> <p>2013: RATG13 is discovered in China</p>	<p>Moderna and NIH's VRC join in collaborative agreement, renewed in 2017 & 2019 for Coronavirus/mRNA vaccine Platform</p> <p>2017: Ralph Baric Signs a MTA with Moderna & the VRC for coronavirus vaccine technology</p>	<p>Dec 2019- C19 is spreading in China, Baric amends his Moderna Contract</p> <p>Nov 2021- Pfizer admits Myocarditis was an observed side effect [mainly young men] for their C19 injection.</p>


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Pfizer and BioNTech Receive Expanded U.S. FDA Emergency Use Authorization of COVID-19 Vaccine Booster to Include Individuals 18 and Older

Friday, November 19, 2021 - 08:25am






- Expanded authorization allows more Americans to receive a booster dose to help preserve a high-level of protection against COVID-19

NEW YORK & MAINZ, Germany--(BUSINESS WIRE)-- Pfizer Inc. (NYSE: PFE) and BioNTech SE (Nasdaq: BNTX) today announced that the U.S. Food and Drug Administration (FDA) has expanded the emergency use authorization (EUA) of a booster dose of the Pfizer-BioNTech COVID-19 Vaccine to include individuals 18 years of age and older. The booster dose is to be

8 📖 This thread is already not for the faint of heart, so to save time I suggest reading the details of the MTA between Moderna, Baric and the NIH's VRC leading up to 2020: & how Moderna made the C19 jab formulation in ONE DAY:

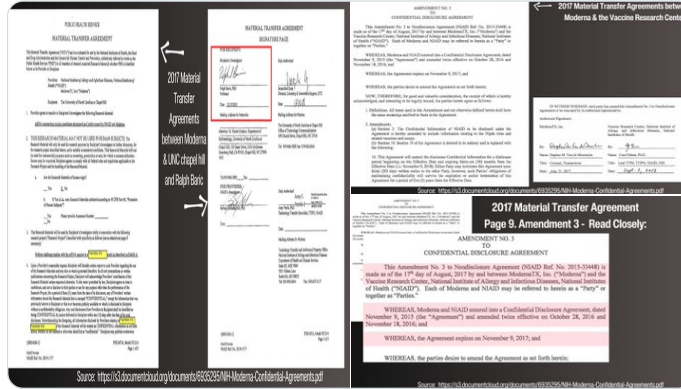


Destiny Rezendes
@dezzie_rezzie · Follow



Replying to @dezzie_rezzie

8 📄 In that same MTA, later amended, Ralph Baric signs the MTA in 2019 for the same technology but read Amendment 3 carefully. According to the contract, the collaboration between VRC and Moderna didn't start in 2017, but rather on Nov 9, 2015. 🕒 🤔



10:45 PM · Nov 30, 2023



72



See the latest COVID-19 information on X

Read 2 replies

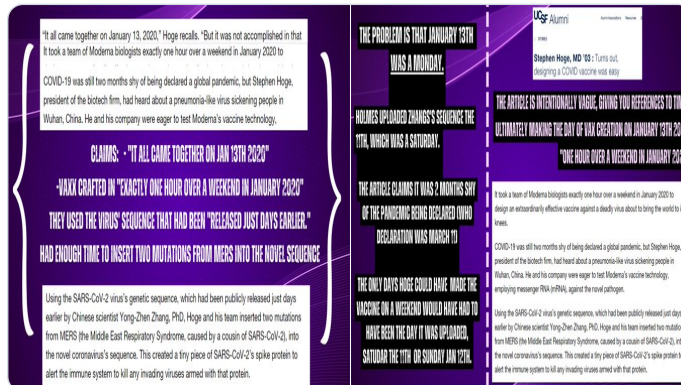


Destiny Rezendes
@dezzie_rezzie · Follow



Replying to @dezzie_rezzie

10 📄 Hoge (Moderna) claims he created the C19 📄 in 1hr, over a weekend on Jan 13th 2020. However, the 13th was a weekday- a Monday. Zhang/Howell uploaded the sequence on Sat. the 11th. Hoge admits he was "Eager" to get to "Test" out the 📄 .



6:14 AM · Mar 20, 2023

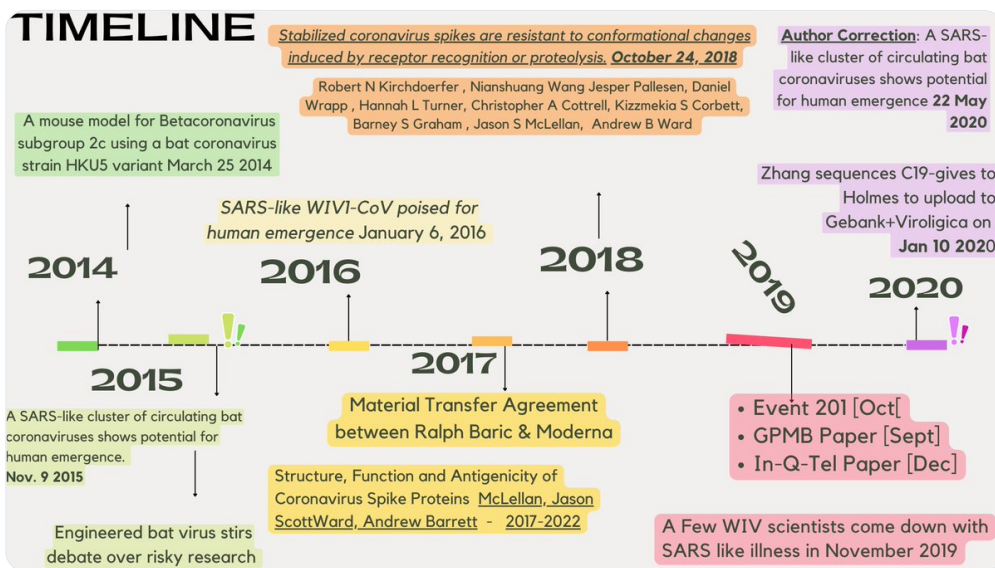


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Read 3 replies



JOURNAL ARTICLE

An Experimental Model for Myocarditis and Congestive Heart Failure after Rabbit Coronavirus Infection

Suzanne Edwards, J. David Small, Joachim Dieter Geratz, Lorraine K. Alexander and Ralph S. Baric

The Journal of Infectious Diseases

Vol. 165, No. 1 (Jan., 1992), pp. 134-140 (7 pages)

Published By: Oxford University Press



About the Human Vaccines Project

The Human Vaccines Project is a non-profit public-private partnership with the mission to accelerate the development of vaccines and immunotherapies against major infectious diseases and cancers by decoding the human immune system. The Project has a growing list of partners and financial supporters including: Vanderbilt University Medical Center, the J. Craig Venter Institute, the La Jolla Institute, The Scripps Research Institute, UC San Diego, Aeras, Boehringer Ingelheim, Crucell/Janssen, GSK, Pfizer, MedImmune, Regeneron, Sanofi Pasteur, the Robert Wood Johnson Foundation and the John D. and Catherine T. MacArthur Foundation. The Project brings together leading academic research centers, industrial partners, nonprofits and governments to address the primary scientific barriers to developing new vaccines and immunotherapies, and has been endorsed by 35 of the world's leading vaccine scientists. www.humanvaccinesproject.org

About Moderna Therapeutics

Moderna is a clinical stage pioneer of [messenger RNA Therapeutics™](#), an entirely new in vivo drug technology that directs the body's cells to produce human proteins, antibodies and entirely novel protein constructs, which are in turn secreted or active intracellularly. With its breakthrough platform, Moderna is developing mRNA vaccines and therapeutics to address currently undruggable targets and deliver a new class of medicines for a wide range of diseases and conditions. Moderna is developing and plans to commercialize its innovative mRNA medicines for infectious diseases, cancer (immunooncology), rare diseases, cardiovascular disease and pulmonary disease, through its ecosystem of internal ventures and strategic partners.

Headquartered in Cambridge, Mass., privately held Moderna currently has strategic agreements with [AstraZeneca](#), [Merck](#), [Alexion Pharmaceuticals](#) and [Vertex Pharmaceuticals](#), as well as the Defense Advanced Research Projects Agency ([DARPA](#)), an agency of the U.S. Department of Defense; the Biomedical Advanced Research and Development Authority ([BARDA](#)), a division of the Office of the Assistant Secretary for Preparedness and Response (ASPR) within the U.S. Department of Health and Human Services (HHS); and the [Bill & Melinda Gates Foundation](#). To learn more, visit www.modernatx.com.

Moderna Contacts:

Investors:
Maren Winnick
617-674-5297

9 📖 What's the tie? DARPA's wishes of Synthetic Biology and Rapid Countermeasure deployments who outside of the DEFUSE project was ALREADY working with Moderna who was ALREADY working with Ralph Baric before the pandemic started! You'll see this truth in DARPA's internal document [unclassified] from 2017 📄

Defense Advanced Research Projects Agency

Stefanie Tompkins, Ph.D.
Acting Deputy Director

NDIA S&ET Conference

April 18, 2017



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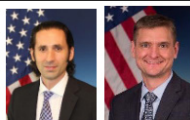
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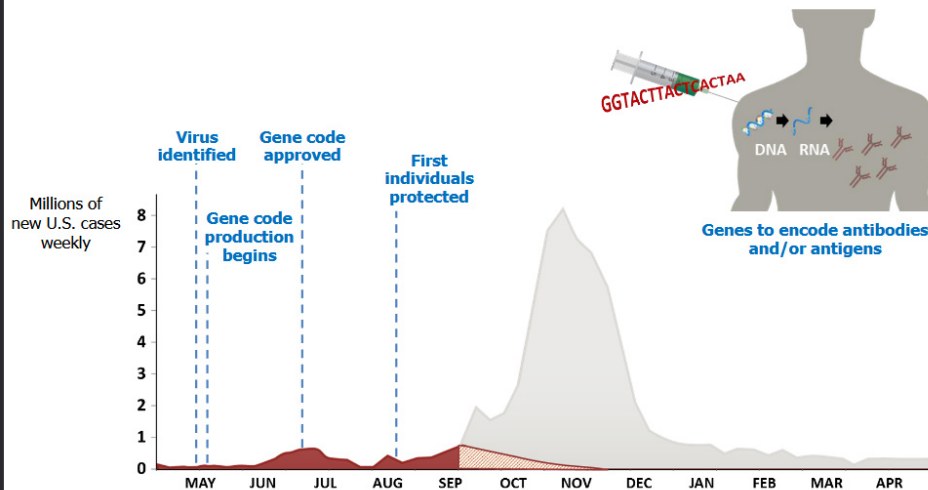
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2



Prevent the next pandemic

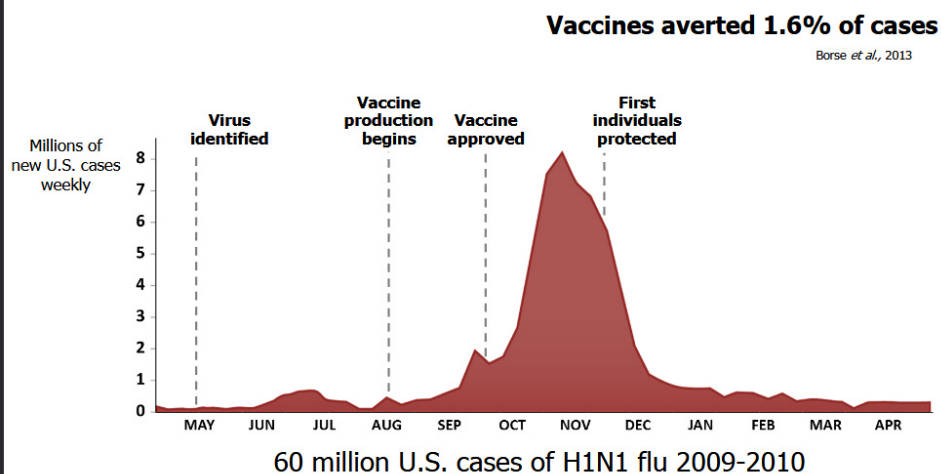


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19



Autonomous Diagnostics to Enable Prevention and Therapeutics (ADEPT)



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18

10 📖 The reality is DARPA didn't approve the DEFUSE project likely because they realized they didn't need EHA to move forward w/their goals. Eco Health was already deep in w/ USAID [CIA front] & according to Chris Darby of In-Q-Tel in 2019, the intelligence community's top focus was bio-data.

-Eco Health was successful in its role with USAID in China and SE Asia & ADEPT was already making great strides, as was Moderna & Baric.

-So, Baric knew since the 1990's that CoV's could cause Myocarditis in infected mammals that was similar to its presentation in humans.

-The scientific community knew since 2003/4 that SARS vaccines were largely ineffective and that the spike protein and mRNA bio-accumulated in vital organs, like the heart.

-The US's biological research oversight group, the NSABB, knew since 2006/7 that Baric could create a full CoV genome WITHOUT leaving a trace that it was lab altered & NIH knew [because they funded it] that Baric was doing GOF research with Corona-Virologists in Wuhan and w/ EHA.

-The USG KNEW since 2018/2019 that Wuhan Institute of Virology was lacking in their safety regulations [despite being trained by University of TX Medical Branch staff] and they knew the science was ongoing regardless.

-HHS knew that Baric led the forefront on not only the vaccine [Moderna] but also the heavily pushed his Monoclonal antibody "treatment" Remdesivir, which is a FAILED Hept/Ebola/Zika "treatment" and the men who helped him; Mark Denison & Barney Graham all received MILLIONS after the "vaccine rollout" allotted to their establishments for intellectual property rights [Vanderbilt Univ, Vaccine Research Center/NIH]

AND YET... The Peter Daszak Transcript from NOV 2023 has not been released! The recent Fauci transcript has YET TO BE RELEASED. AND RALPH BARIC HAS NEVER HAD TO BE HELD ACCOUNTABLE or properly investigated over C19!

The USG put 5 TRILLION DOLLARS into a "Pandemic Oversight Fund" [the largest financial effort in mankind's history] but they can't afford to investigate this pandemic or vaccine which has Injured and killed people all over the world.

What about those who lost their kids to Myocarditis post vaccination?! You're gonna tell them its all a coincidence and it was "for the greater good?"

Despite what CCN medical correspondent, & freedom-hater, Dr. Leana Wen thinks, WE ARE NOT RABBITS. We are humans who deserve the truth & I shouldn't have to throw my life away to learn all this crap!

I'm not apologizing for the long post- You don't like it then do it yourself. Otherwise, links will be added [if not already on the slides] as a comment to avoid algorithm throttling.

SOURCES

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More Links:

Gates Karolinska 2014:

Pubmed Myocarditis Eval 2022:

DARPA 2017/ADEPT program Unclassified:

Moderna on mRNA +DARPA from 2018 Internal Doc pg 27-57:

Moderna's beginnings 2017 article:

ADEPT-Protect:

Jessica Rose & @P_McCulloughMD 's Jan 2024 paper on Vaccine induced Myocarditis 🔥:

1995 Baric article:ECHOCARDIOGRAPHIC CHANGES
FOLLOWING RABBIT CORONAVIRUS INFECTION

Baric article on CoV induced Myocarditis in Rabbits:

Archive of Pfizer's release statement on Myocarditis:

All other used references are in the Sources Image at the end of the thread. Thank you and God

Bless<https://www.fiercebiotech.com/biotech/press-release-bill-and-melinda-gates-to-receive-honorary-degrees-from-karolinska-institutet>

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